



NBS SPECIAL PUBLICATION **362**

Chemical Kinetics in the C-O-S and H-N-O-S Systems:

A Bibliography—
1899 through June 1971

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FOREWORD

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David R. Lide, Jr.,
Chief, Office of Standard
Reference Data

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CHEMICAL KINETICS IN THE C-O-S AND H-N-O-S SYSTEMS:

A BIBLIOGRAPHY - 1899 through June 1971[†]

FRANCIS WESTLEY

A bibliography, a reaction oriented list of references, is provided for published papers and reports containing rate data for reactions of COS, COS₂, CS, CS₂, CS₃, D₂S, H₂S, H₂S₂, HSO₂, S, SH, SO, SO₂, SO₃, SO₄, S₂, S₂O₂, S₄, S₆ and S₈ with each other and with CO, CO₂, D, D₂, H, H₂, H₂O, N, N₂, N₂O, N₂O₅, NO, NO₂, NO₃, NOS, O, OH, O₂, O₃, R and RH. Three lists of critical reviews dealing with the above reactions are included. 317 papers covering 240 reactions are listed. The period covered extends from 1899 through June 1971.

Key words: Bibliography; carbon oxysulfides; carbon sulfides; chemical kinetics; gas phase; hydrogen; nitrogen; nitrogen oxides; oxygen; sulfur; sulfur hydrides; sulfur oxides.

Introduction

This bibliography lists papers and reports on the gas phase reaction kinetics in the carbon - oxygen - sulfur, carbon - sulfur, and hydrogen - nitrogen - oxygen - sulfur systems. The material is presented in two ways: (1) by reaction, listing each pertinent article and (2) in a general reference list, arranged alphabetically by first author.

The articles have been selected from the files of the Chemical Kinetics Information Center. The criterion for inclusion of an article is that there must be some new information on the reaction, when the article in question is compared with the chronologically preceding ones. That is, simple quotations of the results of others and ad hoc guesses have been excluded. There are gray areas, such as the statement of a rate calculated from that of the reverse reaction and the equilibrium constant, or mechanistic information. If the information seemed to be important the reference was included.

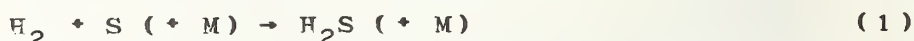
Most of the reactions listed in this bibliography show a chemical change. Some of these show a photolytic, chemiluminescent or energy transfer process that occurs simultaneously

† This project is an activity of the Chemical Kinetics Information Center, N.B.S. The work was supported by the Office of Standard Reference Data, N.B.S., and the Naval Ordnance Systems Command ORD 3311 as part of a program to foster the production of tables of chemical kinetics.

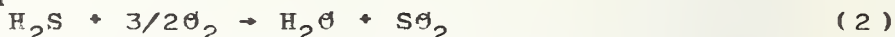
with chemical change. In addition there are a few reactions that are simply collisional energy transfer or photo excitation processes.

Symbols defining specific electronic or vibronic states are not used. Instead an excited atom or molecule is indicated by a simple asterisk. The nature of a collisional process is indicated in an explanatory parenthesis following the reaction.

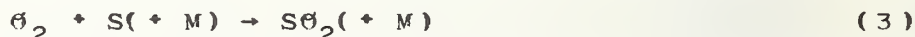
Some of these reactions have been studied since the early days of chemical kinetics. For instance, the reaction for the H_2S synthesis from its elements:



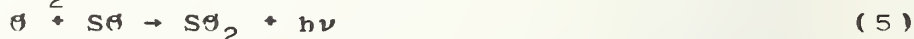
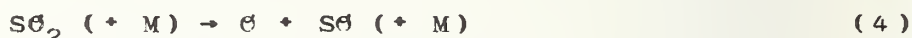
was studied kinetically for the first time by Bodenstein⁵⁾*, just before the end of 19th century. Its study was continued in the nineteen twenties by Norrish and Rideal^{20, 21, 23)} and in the thirties by Aynsley^{1, 2, 3)}. The oxidation of H_2S by molecular oxygen



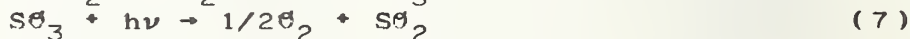
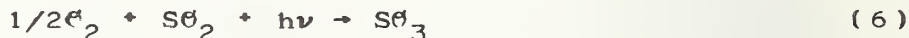
was studied for the first time in 1928 by Chamberlin and Clarke⁶⁾ who measured the flame velocities of this reaction. The first rate studies were undertaken by Farkas¹⁰⁾ in 1931 and - at about the same time - by Taylor and Livingston³²⁾, Thompson³³⁾ and Kelland³⁴⁾. The synthesis of SO_2 from its elements



was studied by Norrish and Rideal^{21, 22)} in 1923. Gaydon¹¹⁾, in 1934, offered a mechanism for the fluorescence of heated SO_2 :



The photokinetics of sulfur oxides is a few decades older than the Gaydon mechanism. For instance, in 1907, Coehn⁷⁾ and a few years later Coehn and Becker⁸⁾ studied the photooxidation of SO_2 by molecular oxygen, as well as the photodissociation of SO_3 to O_2 and SO_2 :



Studies of the kinetics of carbon sulfides and carbon oxysulfides are relatively recent, the ground work in this field being laid down by Kondrat'ev^{17, 18, 19)} and Jakovleva¹⁶⁾ in 1938 and 1940.

In the field of energy transfer reactions, the first study for the vibrational relaxation of an excited SO_2

molecule was performed by Schweikert²⁹⁾ in 1915, by using sound absorption techniques. Major advances in understanding the kinetics and mechanism of fluorescence and quenching of the electronically excited SO_2 molecule were made by

* Superscript figures indicate the literature references listed at the end of the introduction

Halstead^{12, 13, 14}), Thrush³⁵) and Calvert and coworkers^{4, 9, 15, 24, 25, 26, 27, 28, 30, 31}).

This short historical survey of the gas phase reaction kinetics in the hydrogen - oxygen - sulfur system, extending from the beginning of the century until today, allows a comparison with kinetic history of nitrogen - oxygen system for the same period of time. As pointed out in a previous N - O chemical kinetics bibliography³⁷), the experimental work on the nitrogen - oxygen system started at the beginning of this century and - since then - has been continuing uninterrupted. The abundance of experimental kinetic studies for this system is such that many chemists have undertaken reanalyses of the existing data with the goal of establishing "best values". The number of critical reviews for the kinetics of the N - O system is impressive. Moreover, the molecular structure of these molecules has been established and their electronic and vibrational spectra analyzed (with the important exception of the visible bands of NO_2). These structural and kinetic data make it possible to answer, quantitatively, questions about the behavior of these molecules in a polluted atmosphere.

Turning now to the hydrogen - nitrogen - oxygen - sulfur system, the picture is completely different: the number of papers dealing with the kinetics of this set, from the beginning of the century until today, is about one third of the corresponding number of papers in the N - O system, in spite of the fact that the number of reactions studied in the sulfur set is almost equal to the number of reactions in the nitrogen - oxygen system. The uncertainty of the existing kinetic data in the H - N - O - S system is such that few attempts have been made to establish best values for the rates. The number of critical reviews is disappointingly small. Furthermore, the interpretation of spectral data is not nearly so complete as for the nitrogen oxides.

The state of the matter has been very well described in a paper by Urone and Schroeder³⁶) entitled: " SO_2 in the atmosphere: a wealth of monitoring data, but few reaction rate studies." The conclusion of these authors is valid for the whole H - N - O - S system. It is only too obvious that sulfur, together with its inorganic and organic compounds, should be at least as important for the pollution scientist as the simpler N - O system. Indeed, sulfur, or its compounds, is not a component of the "pure" air, but a villain, and - maybe - one of the greatest villains. Sulfur and its compounds are present in volcanic emissions and in fuel combustion products as rubber and tires, automobile exhausts, industrial wastes, synthetic fibers, and so on. And, from these sources, it goes into the atmosphere, in one form or another, polluting it.

For these reasons, the editor hopes that this bibliography by summing up what has been done in the field of chemical kinetics of the H - N - O - S system, will make it possible to establish - by difference - what remains to be done in this field. Should this be done, it would allow the kineticists, the spectroscopists and the quantum chemists to plan a concerted, more thorough study of this system.

This bibliography is not the result of the effort of a single person, but of the whole staff of Chemical Kinetics Information Center. My thanks to all of them.

In particular, I wish to thank Dr. David Garvin, Director of the Center, for his more than helpful suggestions and constant guidance; Mr. James G. Koch, Supervisor, for tracking down and obtaining papers and reports, otherwise very difficult to obtain; Mrs. Ann C. Robertson and Mrs. Geraldine W. Zumwalt, for typing a difficult manuscript with particular care.

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*) . Note: The names of these two authors have been transliterated in different ways: Jakovleva, or Yakovleva; Kondrat'ev Kondratiev, or Kondratjew; according to the journal which published their papers and to the language in which the articles were written.

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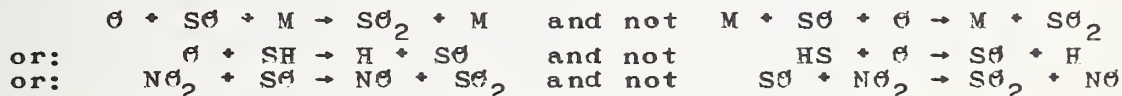
GUIDELINES FOR THE USER

The goal of this bibliography is to survey the chemical reactions in the C - S, C - S and H - N - S systems. Energy transfer and photo-excitation processes are included only when they appear (to us or to the original author) to be important in the mechanisms of chemical processes. The bibliography lists references to published papers and reports in which rate data are reported for reactions of COS, COS₂, CS, CS₂, CS₃, D₂S, H₂S, H₂S₂, HS₂, S, SH, S₂, S₂^{*}, S₃, S₄, S₆ and S₈ with each other and with CO, CO₂, D, D₂, H, H₂, H₂^{*}, N, N₂, N₂^{*}, N₂O₅, NO, NO₂, NO₃, NOS, O, OH, O₂, O₃, R and RH. Among these compounds, nine of them include atoms arranged in a sequence other than alphabetical, namely:
HS₂, OH, RH, SH, S₂, S₃, S₄, S₂^{*}

The sequence of atoms in each of these compounds is based on traditional convention. As written above, all three sequences of atoms, free radicals and molecules define the order in which the reactions are arranged, i.e.: semi-alphabetically by first reactant.

The rule for writing the chemical equations dealing with the above listed compounds is very simple. Within each reaction the reactants and products are arranged according to the same scheme: separately and alphabetically. The general "third body", M, is always last. This rule would be best defined by some illustrative examples.

So, one should write:



This ordering scheme runs counter to chemical conventions that order by oxidation state. It does bring the atom and its parent molecule together for this simple collection. The rule for arrangement is also simple. It is a character by character comparison, with the priority order being blank, numerals, and then letters. Chemical symbols without asterisk (ground state) take precedence over those with asterisk (excited state)



The bibliography is in four parts:

Part I. Reactions of Carbon Oxydisulfides,

Part II. Reactions of Carbon Disulfides and

Part III. Reactions of Sulfur, Sulfur Hydrides and Sulfur Oxides.

Part-IV. Is the combined bibliography for Parts I, II and III, arranged alphabetically by authors. The complete reference citation for each article mentioned is given here. Occasionally explanatory notes are appended. These establish

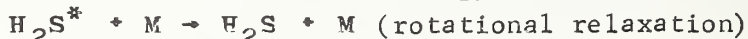
the "bibliography chain" for closely related papers by the same authors.

Parts I to III are arranged by reaction, following the order indicated above. Forward and reverse reactions are listed separately. Reactants are always on the left.

At the end of these parts, the sections I(b), II(b), and III(b) each include a short list of critical reviews or surveys dealing with the reactions listed in sections I(a), II(a), and III(a), respectively.

Most of the reactions listed in parts I, II and III show a chemical change. Some of these show a photolytic, chemiluminescent or energy transfer process that occurs simultaneously with chemical change. In addition there are a few reactions that are simply collisional energy transfer or photo-excitation processes.

Symbols defining specific electronic or vibronic states are not used. Instead, an excited atom or molecule is indicated by a simple asterisk. The nature of a collisional process is indicated in our explanatory parenthesis following the reaction e.g.:

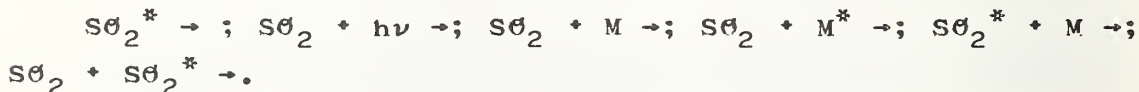


The chemical equations of the overall reactions are not always balanced. An unbalanced equation indicates that the author mentions the reactants and the products of the reaction without the help of an equation, or that the chemical equation given by the author is unbalanced.

Very often, a reference mentioning a reaction without a third body, M, will be found under a heading indicating the same reaction with M on both sides.

In order to render the chemical change occurring in a reaction easily observable to the eye, a reactant, or a product may appear two, or even three times in the same heading (e.g.: $\text{SH} + \text{SH} \rightarrow \text{H}_2\text{S} + \text{S}$, $\text{SO} + \text{SO}_3 \rightarrow \text{SO}_2 + \text{SO}_2$, $\text{S}_2\text{SO}_2 + h\nu \rightarrow \text{SO} + \text{SO}$).

It is felt that the most profitable method for finding references dealing with a certain reaction included in this bibliography would be to consider first all headings with the same reactants, with or without third body M, with or without $h\nu$, in excited or ground state, and regardless of the products. Only thereafter should the user accept or reject a paper, according to his own objective. As an example: Decomposition of SO_2 . The user should consider the reactions having on the left side:



The references under each reaction list the author(s) and the sources, in the following form:

Author(s)	Source-Year-Volume-Page	Number of Author(s)
Thompson, H. W.	NATUA-1931-127-629	1
Halstead and Thrush	PRLAA-1966-295-380	2
Collier, et al.	JACSA-1970-92-217	3 or more

The sources are indicated by their ASTM CODEN abbreviations^{*)}. A guide to these codes follows. A code prefixed with an asterisk is a code not in the ASTM CODEN set. These are codes we have assigned for reports from industrial laboratories, research institutes and universities. When the CODEN system adopts appropriate codes they will be replaced. The present, temporary codes usually end with Z or U. They are at times derived from the company name and at times from their stock symbols.

*) Blumenthal, J. G., Karaman, M., and Peters, A., Editors, "CODEN FOR PERIODICAL TITLES" (Including Non-Periodical Titles and Deleted Coden), Vol. I and II, ASTM Data Series DS 23_B, (1970). (American Society for Testing and Materials, 1916 Race St., Philadelphia, Penna. 19103).

JOURNAL AND REPORT CODES

AANLA	Atti della Accademia Nazionale dei Lincei, Rendiconti, Classe di Scienze Fisiche, Matematiche e Naturali (Rome)
ACPYA	Acta Physicochimica U.R.S.S. (Moscow)
ACSRA	Abstracts of Papers. American Chemical Society (Washington)
ACUSA	Acustica (Stuttgart/Zurich)
ADPCA	Advances in Photochemistry (London/New York)
AJCHA	Australian Journal of Chemistry (East Melbourne)
ANPYA	Annalen Der Physik (Leipzig)
*APCPZ	Air Pollution Control Association Preprints
APPLA	Applied Physics Letters (New York)
ARPLA	Annual Review of Physical Chemistry (Stanford, Calif.)
ATENB	Atmospheric Environment. An International Journal (Oxford)
*AVEVZ	AVCØ - Everett Research Report
AWPØA	Air and Water Pollution (Oxford)
BBPCA	Berichte Der Bunsengesellschaft Fuer Physikalische Chemie (Weinheim, Germany)
BØØKA	Book
BSCBA	Societes Chimiques Belges, Bulletin (Brussels)
CBFMA	Combustion and Flame (London)
CCØMA	Chemical Communications (London)
CHMBA	Chemistry in Britain (London)
CHPLB	Chemical Physics Letters (Amsterdam)
CJCHA	Canadian Journal of Chemistry (Ottawa)
CRAUA	Comptes Rendus (Doklady) De L'Academie Des Sciences De L'U.R.S.S (Moscow)
CSAAA	Chemical Society, Annual Reports on the Progress of Chemistry, Section A. General, Physical, and Inorganic Chemistry (London)
DABBB	Dissertation Abstracts International B. The Sciences and Engineering
DABSA	Dissertation Abstracts B. Sciences and Engineering
DFSØA	Discussions of the Faraday Society (Aberdeen, Scotland)
DKPCA	Doklady Physical Chemistry, Proceedings of the Academy of Sciences of the U.S.S.R. (New York)
ESTHA	Environmental Science and Technology (Washington)
ESTMA	Est Metallurgique (Besancon, France)
FUSJA	Fuel Society Journal, University of Sheffield (England)
*GCABZ	GCA (Geophys. Corp. Am.), Bedford, Mass., GCA Technology Division, Air Force Weapons Lab. Technical Reports
HCACA	Helvetica Chimica Acta (Basel)
HHHPA	Hua Hsueh Hsueh Pao (Peking)
IANKA	Izvestiia Akademii Nauk S.S.S.R., Otdelenie Khimicheskikh Nauk (Moscow)
IECHA	Industrial and Engineering Chemistry (Washington)

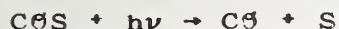
IJCKB	International Journal of Chemical Kinetics (New York)
*IUAPZ	International Union of Air Pollution Prevention Association (Washington, D.C., December 6-11, 1970) Preprint
JACSA	Journal of the American Chemical Society (Washington)
JAPIA	Journal of Applied Physics (New York)
JAPUA	Journal of Applied Chemistry of the U.S.S.R. (New York) English Translation of Zh. Prikl. Khim.
JASMA	Journal of the Acoustical Society of America (New York/Lancaster, Pa.)
JCPSA	Journal of Chemical Physics (New York)
JCSIA	Journal of the Chemical Society, A. Inorganic, Physical, Theoretical (London)
JCSOA	Journal of the Chemical Society (London)
JEPOA	Journal of Engineering for Power, Series A of the Transactions of the A.S.M.E. (American Society of Mechanical Engineers) (New York)
JPCAA	Journal of the Air Pollution Control Association (Pittsburgh)
JPCHA	Journal of Physical Chemistry (Washington/Ithaca, N.Y.)
JQSPA	Journal of Quantitative Spectroscopy and Radiative Transfer (Oxford/New York)
KGKZA	Kogyo Kagaku Zasshi (Tokyo)
KHVKA	Khimiia Vysokikh Energii (Moscow)
MDPCA	Memoirs of the Defense Academy, Mathematics, Physics, Chemistry and Engineering (Yokosuka City, Japan)
NACGA	Nachrichten Der Akademie Der Wissenschaften in Goettingen, Mathematisch - Physikalische Klasse, Iia. Mathematisch - Physikalisch - Chemische Abteilung (Goettingen, Germany)
NASCA	National Aeronautics and Space Administration, Technical Note (Washington)
NATUA	Nature (London)
NUCIA	Nuovo Cimento (Bologna, Italy)
OPSUA	Optics and Spectroscopy USSR (Washington) English Translation of Optika i Spektroskopiya
PHCBA	Photochemistry and Photobiology, an International Journal (Oxford/New York)
PHYSA	Physica (Amsterdam/Utrecht)
*PICFZ	Proceedings of the International Conference on the Mechanism of Corrosion by Fuel Impurities (Marchwood, near Southampton, Hampshire, England, 20th-24th, May 1963)
PLSSA	Planetary and Space Science, Including Translations Concerned with the Physical Sciences Published in "Iskusstvenny Sputniki Zemli" (Oxford)
PRLAA	Proceedings of the Royal Society, Series A. Mathematical and Physical Sciences (London)
SCIEA	Science. American Association for the Advancement of Science (Washington)
SYMCA	Symposium on Combustion (International)
TELLA	Tellus (Stockholm)
TFSDA	Transactions of the Faraday Society (Aberdeen, Scotland/London)

ZAACA	Zeitschrift Fuer Anorganische Allgemeine Chemie (Leipzig/Hamburg)
ZEELA	Zeitschrift Fuer Elektrochemie (Weinheim/Halle, Germany)
ZEPCA	Zeitschrift Fuer Physikalische Chemie, Stoechiometrie und Verwandschaftslehre (Leipzig/Berlin)
ZETFA	Zhurnal Eksperimental'noi i Teoreticheskoi Fiziki (Moscow)
ZFKHA	Zhurnal Fizicheskoi Khimii (Moscow)
ZPCBA	Zeitschrift Fuer Physikalische Chemie, Abteilung F. Chemie Der Elementarprozesse, Aufbau Der Materie (Leipzig)
ZPCFA	Zeitschrift Fuer Physikalische Chemie (Frankfurt am Main)
ZPCLA	Zeitschrift Fuer Physikalische Chemie (Leipzig)
13DFA	Preprints of Papers Read at the International Symposium on Free Radicals, 5th Symposium, Uppsala, July 6-7, 1961
18MNA	Proceedings of the International Congress of Pure and Applied Chemistry, 11th Congress, London, July 17-24, 1947

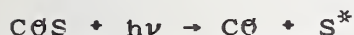
I(a). REACTIONS OF CARBON OXYSULFIDES



Partington and Neville JCSOA-1951-1230



Breckenridge, W. H., Jr.	DABBB-1969-30-1063 (mechanism)
Breckenridge and Taube	JCPSA-1970-53-1750
Forbes and Cline	JACSA-1939-61-151 (quantum yield)
Fowles, et al.	JACSA-1967-89-1352 (mechanism)
Jakovleva and Kondratjew	ACPYA-1940-13-241 (mechanism)
Kondratjew, V. N.	ACPYA-1942-16-272 (mechanism)
McGarvey and McGrath	PRLAA-1964-278-490 (mechanism)
Sidhu, et al.	JACSA-1966-88-2412
Strausz and Gunning	JACSA-1962-84-4080



Basco and Pearson	TFSOA-1967-63-2684 (mechanism)
Breckenridge, W. H., Jr.	DABBB-1969-30-1063 (mechanism)
Breckenridge and Taube	JCPSA-1970-53-1750
Donovan, R. J.	TFSOA-1969-65-1419 (mechanism)
Donovan, et al.	TFSOA-1970-66-774 (mechanism)
Fair, et al.	CJCHA-1971-49-1659 (mechanism)
Fowles, et al.	JACSA-1967-89-1352 (mechanism)
Gunning and Strausz	ADPCA-1966-4-143 (mechanism)
Knight, et al.	JACSA-1963-85-1207 (mechanism)
Knight, et al.	JACSA-1963-85-2349 (mechanism)
Knight, et al.	JACSA-1964-86-4243 (mechanism)
Kondrat'ev and Yakovleva	ZETFA-1940-10-1038 (mechanism)
Lown, et al.	JACSA-1967-89-1056
McGrath, et al.	CJCHA-1967-45-2454
Sidhu, et al.	JACSA-1966-88-254
Sidhu, et al.	JACSA-1966-88-2412
Strausz and Gunning	JACSA-1962-84-4080
Wiebe, et al.	JACSA-1965-87-1443



Kondrat'ev and Yakovleva	ZFKHA-1940-14-853
McGarvey and McGrath	PRLAA-1964-278-490 (mechanism)



Thompson, et al. JCSOA-1935-1033



Hay and Belford	JCPSA-1967-47-3944
Partington and Neville	JCSOA-1951-1230
Schecker and Wagner	IJCKB-1969-1-541
Troe and Wagner	BBPCA-1967-71-937 (review)



Sidhu, et al. JACSA-1966-88-2412



Breckenridge and Taube JCPSA-1970-53-1750



Fowles, et al.	JACSA-1967-89-1352 (mechanism)
Gunning and Strausz	ADPCA-1966-4-143 (review)



Arnold, et al. TFSOA-1957-53-738 (calculation)

$C\dot{O}S^* + M \rightarrow C\dot{O}S + M$ (vibrational relaxation) (Continued)

Cottrell and McCoubrey	BØØKA-1961-96 (review)
Eucken and Aybar	ZPCBA-1940-46-195
Fricke, E. F.	JASMA-1940-12-245
Herzfeld and Litovitz	BØØKA-1959-250 (review)
Knudsen and Fricke	JASMA-1940-12-255
McCoubrey, et al.	TFSØA-1961-57-1472 (review)
Walker, R. A.	JCPSA-1951-19-494 (review)

$C\dot{O}S + \dot{O} \rightarrow C\dot{O} + S\dot{O}$

Carrington, et al.	PRLAA-1966-293-108 (mechanism)
Hancock and Smith	CHPLB-1969-3-573 (mechanism)
Homann, et al.	NACGA-1967-2-13
Homann, et al.	BBPCA-1968-72-998
Hoyermann, et al.	BBPCA-1967-71-603
Rolfes, et al.	JPCHA-1965-69-849
Sharma, et al.	JCPSA-1965-43-2155
Sharma, et al.	JPCHA-1967-71-1602
Sullivan and Warneck	BBPCA-1965-69-7
Westenberg, A. A.	SCIEA-1969-164-381 (review)
Westenberg and deHaas	JCPSA-1969-50-707
Wright, F. J.	JPCHA-1960-64-1648 (mechanism)

$C\dot{O}S + \dot{O} \rightarrow C\dot{O} + S\dot{O}^*$ (chemiexcitation)

Carrington, et al.	PRLAA-1966-293-108 (mechanism)
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$C\dot{O}S + \dot{O} \rightarrow C\dot{O}^* + S\dot{O}$ (chemiexcitation)

Pollack, M. A.	APPLA-1966-8-237 (mechanism)
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$C\dot{O}S + \dot{O} \rightarrow C\dot{O}_2 + S$

Arnold and Kimbell	CHPLB-1969-3-469 (mechanism)
Myerson, et al.	JCPSA-1957-26-1309 (mechanism)
Wright, F. J.	JPCHA-1960-64-1648 (mechanism)

$C\dot{O}S + \dot{O} \rightarrow CS + \dot{O}_2$

Sheen, D. B.	JCPSA-1970-52-648
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$C\dot{O}S + \dot{O} + S\dot{O} \rightarrow C\dot{O}S^* + S\dot{O}_2^*$ (chemiexcitation)

Melliar-Smith, et al.	JCSIA-1971-606 (mechanism)
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$C\dot{O}S + \dot{O}_2 \rightarrow C\dot{O} + S\dot{O}_2$

Bawn, C. E. H.	JCSØA-1933-145 (mechanism)
Levy and Merryman	ESTHA-1969-3-63
Myerson, et al.	JCPSA-1957-26-1309 (mechanism)

$C\dot{O}S + 2\dot{O}_2 \rightarrow C\dot{O}_2 + \dot{O} + S\dot{O}_2$

Bawn, C. E. H.	JCSØA-1933-145 (mechanism)
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$C\dot{O}S + 3/2\dot{O}_2 \rightarrow C\dot{O}_2 + S\dot{O}_2$ (overall)

Sarkisyan and Nalbandyan	DKPCA-1968-178-69 (related paper)
Thompson, et al.	JCSØA-1933-208

$C\dot{O}S + S \rightarrow C\dot{O} + S_2$

Basco and Pearson	TFSØA-1967-63-2684
Breckenridge, W. H., Jr.	DABBB-1969-30-1063
Breckenridge and Taube	JCPSA-1970-53-1750
Fowles, et al.	JACSA-1967-89-1352 (mechanism)
Gunning and Strausz	ADPCA-1966-4-143 (mechanism)
Hay, A. J.	DABSA-1967-27-2313

$\text{COS} + \text{S} \rightarrow \text{CO} + \text{S}_2$ (Continued)

Hay and Belford	JCPA-1967-47-3944
Knight, et al.	JACSA-1963-85-1207 (mechanism)
Knight, et al.	JACSA-1963-85-2349
Knight, et al.	JACSA-1964-86-4243
Kondratjew, V. N.	ACPYA-1942-16-272
Schecker and Wagner	IJCKB-1969-1-541
Sidhu, et al.	JACSA-1966-88-254
Sidhu, et al.	JACSA-1966-88-2412
Strausz and Gunning	JACSA-1962-84-4080
Wiebe, et al.	JACSA-1965-87-1443

$\text{COS} + \text{S}^* \rightarrow \text{CO} + \text{S}_2$

Breckenridge, W. H., Jr.	DABBB-1969-30-1063
Breckenridge and Taube	JCPA-1970-53-1750
Fowles, et al.	JACSA-1967-89-1352
Gunning and Strausz	ADPCA-1966-4-143 (review)
Knight, et al.	JACSA-1963-85-1207 (mechanism)
Knight, et al.	JACSA-1963-85-2349
Knight, et al.	JACSA-1964-86-4243
Sidhu, et al.	JACSA-1966-88-254
Sidhu, et al.	JACSA-1966-88-2412
Strausz and Gunning	JACSA-1962-84-4080
Wiebe, et al.	JACSA-1965-87-1443

$\text{COS} + \text{S}^* \rightarrow \text{CO} + \text{S}_2^*$

Basco and Pearson	TFSOA-1967-63-2684 (mechanism)
Donovan, R. J.	TFSOA-1969-65-1419 (mechanism)
Donovan, et al.	NATUA-1969-222-1164
Donovan, et al.	TFSOA-1970-66-774
Fair, et al.	CJCHA-1971-49-1659
Fowles, et al.	JACSA-1967-89-1352 (mechanism)
McGrath, et al.	CJCHA-1967-45-2454 (mechanism)

$\text{COS} + \text{S} \rightarrow \text{CS} + \text{SO}$

Hay, A. J.	DABSA-1967-27-2313
Hay and Belford	JCPA-1967-47-3944

$\text{COS} + \text{S} + \text{M} \rightarrow \text{COS}_2 + \text{M}$

Basco and Pearson	TFSOA-1967-63-2684
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$\text{COS} + \text{SO} \rightarrow \text{CO}_2 + \text{S}_2$

Halstead and Thrush	PRLAA-1966-295-363 (evaluation)
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$\text{COS}_2 + \text{M} \rightarrow \text{COS} + \text{S} + \text{M}$

Basco and Pearson	TFSOA-1967-63-2684
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$\text{COS}_2 + \text{S} \rightarrow \text{COS} + \text{S}_2$

Basco and Pearson	TFSOA-1967-63-2684
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I(b). REVIEWS

Cottrell and McCoubrey	BOOKA-1961-95 (vibrational relaxation)
Gunning and Strausz	ADPCA-1966-4-143
Herzfeld and Litovitz	BOOKA-1959-250 (vibrational relaxation)
Sorokin and Fridman	BOOKA-1970-
Troe and Wagner	BBPCA-1967-71-937

II(a). REACTIONS OF CARBON SULFIDES



Partington and Neville JCSOA-1951-1230



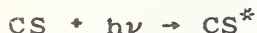
Taylor, G. W. ACSRA-1971-162-Phys. Chem. 14



Porter, G. PRLAA-1950-200-284



Kondratjew and Yakovleva ZFKHA-1940-14-853



Callear and Norrish NATUA-1960-188-53 (mechanism)
Kondratiew, V. CRAUA-1938-20-547
de Sörgo, et al. CJCHA-1965-43-1886 (mechanism)



Callear, A. B. PRLAA-1963-276-401
Callear and Norrish NATUA-1960-188-53 (mechanism)
Dyne and Ramsay JCPSA-1952-20-1055
Kondratiew, V. CRAUA-1938-20-547
Smith, I. W. M. TFSOA-1968-64-3183
Taylor, G. W. ACSRA-1971-162-Phys. Chem. 14



Hancock and Smith CHPLB-1969-3-573 (mechanism)
Hartek and Reeves BSCBA-1962-71-682
Homann, et al. BBPCA-1968-72-998
Jacobson and Kimbell JAPIA-1970-41-5210 (mechanism)



Arnold and Kimbell APPLA-1969-15-351 (mechanism)
Arnold and Kimbell CHPLB-1969-3-469 (review)
Hancock and Smith CHPLB-1969-3-573
Jeffers and Wiswall APPLA-1970-17-67
Suart, et al. CHPLB-1970-5-519 (mechanism)
Suart, et al. CHPLB-1970-7-337 (mechanism)
Wittig, et al. APPLA-1970-16-117 (mechanism)
Wittig, et al. NATUA-1970-226-845 (mechanism)



Wright, F. J. JPCHA-1960-64-1648



McGarvey and McGrath PRLAA-1964-278-490 (mechanism)
Rosenwaks and Yatsiv CHPLB-1971-9-266 (mechanism)
Sheen, D. B. JCPSA-1970-52-648
Wood and Heicklen JPCHA-1971-75-854 (mechanism)
Wood and Heicklen JPCHA-1971-75-861



Arnold and Kimbell APPLA-1969-15-351 (mechanism)
Suart, et al. CHPLB-1970-5-519 (mechanism)
Suart, et al. CHPLB-1970-7-337 (mechanism)

$CS + O_2 \rightarrow COS + O$	Arnold and Kimbell Wood and Heicklen	CHPLB-1969-3-469 (review) JPCHA-1971-75-861
$CS^* + O_2 \rightarrow COS + O$	Pollack, M. A. de Sorgo, et al.	APPLA-1966-8-237 (mechanism) CJCHA-1965-43-1886 (mechanism)
$CS + O_3 \rightarrow CO + SO_2$	Olzyna and Heicklen	JPCHA-1970-74-4188 (mechanism)
$CS + O_3 \rightarrow CO_2 + SO$	Olzyna and Heicklen	JPCHA-1970-74-4188 (mechanism)
$CS + O_3 \rightarrow COS + O_2$	Olzyna and Heicklen	JPCHA-1970-74-4188 (mechanism)
$CS + SO \rightarrow CO + S_2$	Wood and Heicklen	JPCHA-1971-75-854 (mechanism)
$CS + SO \rightarrow CO^* + S_2$ (chemiexcitation)	Pollack, M. A. Wright, F. J.	APPLA-1966-8-237 (mechanism) JPCHA-1960-64-1648
$CS + S_{2n} \rightarrow CS_2 + S_{2n-1}$	Breckenridge, W. H., Jr.	DABBB-1969-30-1063 (mechanism)
$CS_2^* \rightarrow CS_2 + h\nu$	Douglas, A. E. Heicklen, J.	JCPA-1966-45-1007 JACSA-1963-85-3562
$CS_2 + CS_2^* \rightarrow CS + CS + S_2$	de Sorgo, et al. Wood and Heicklen	CJCHA-1965-43-1886 JPCHA-1971-75-854
$CS_2 + CS_2 \rightarrow CS + CS_3$	Arnold, et al.	JPCHA-1970-74-8
$CS_2 + h\nu \rightarrow CS + S$	Basco and Pearson Gregg and Thomas Gunning and Strausz Hancock and Smith Kondratjew and Yakovleva McGarvey and McGrath Pollack, M. A. Wright, F. J.	TFSOA-1967-63-2684 (mechanism) JAPIA-1968-39-4399 (mechanism) ADPCA-1966-4-143 (mechanism) CHPLB-1969-3-573 (mechanism) ZFKHA-1940-14-853 PRLAA-1964-278-490 APPLA-1966-8-237 (mechanism) JPCHA-1960-64-1648 (mechanism)
$CS_2 + h\nu \rightarrow CS + S^*$	Kondrat'ev and Yakovleva	ZETFA-1940-10-1038 (mechanism)
$CS_2 + h\nu \rightarrow CS^* + S$	Callear, A. B.	PRLAA-1963-276-401

$\text{CS}_2 + h\nu \rightarrow \text{CS}^* + \text{S}$ (Continued)

Callear and Norrish
de Sorgo, et al. NATUA-1960-188-53 (mechanism)
CJCHA-1965-43-1886 (mechanism)

$\text{CS}_2 + h\nu \rightarrow \text{CS}_2^*$

Heicklen, J. JACSA-1963-85-3562 (mechanism)
de Sorgo, et al. CJCHA-1965-43-1886 (mechanism)
Wood and Heicklen JPCHA-1971-75-854

$\text{CS}_2 + \text{M} \rightarrow \text{CS} + \text{S} + \text{M}$

Arnold, et al. JPCHA-1970-74-8
Arnold and Kimbell APPLA-1969-15-351 (mechanism)
Arnold and Kimbell JPCHA-1969-73-3751
Gaydon, et al. PRLAA-1964-279-313 (mechanism)
Ølschewski, et al. ZPCFA-1965-45-329
Ølschewski, et al. BBPCA-1966-70-1060
Trope and Wagner BBPCA-1967-71-937 (review)

$\text{CS}_2 + \text{M}^* \rightarrow \text{CS}_2^* + \text{M}$ (energy transfer)

Taylor, G. W. ACSRA-1971-162-Phys. Chem. 14

$\text{CS}_2^* + \text{M} \rightarrow \text{CS}_2 + \text{M}$ (electronic relaxation)

Heicklen, J. JACSA-1963-85-3562
Wood and Heicklen JPCHA-1971-75-854

$\text{CS}_2^* + \text{M} \rightarrow \text{CS}_2 + \text{M}$ (vibrational relaxation)

Angona, F. A. JASMA-1953-25-1116
Cottrell and McCoubrey BØØKA-1961-95 (review)
Fricke, E. F. JASMA-1940-12-245
Gase, et al. ZPCLA-1970-242-107 (calculation)
Gravitt, J. C. JASMA-1960-32-560
Herzfeld and Litovitz BØØKA-1959-250 (review)
Knudsen and Fricke JASMA-1940-12-255
McCoubrey, et al. TFSØA-1961-57-1472 (review)
Richards and Reid JCPSA-1934-2-193

$\text{CS}_2 + \text{N} \rightarrow \text{CS} + \text{NS}$

Westbury and Winkler CJCHA-1960-38-334

$\text{CS}_2 + \text{Ø} \rightarrow \text{CØ}^* + \text{S}_2$ (chemiexcitation)

Arnold and Kimbell CHPLB-1969-3-469 (mechanism)
Gregg and Thomas JAPIA-1968-39-4399 (mechanism)
Pollack, M. A. APPLA-1966-8-237 (mechanism)

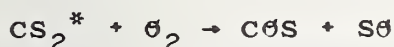
$\text{CS}_2 + \text{Ø} \rightarrow \text{CØS} + \text{S}$

Arnold and Kimbell CHPLB-1969-3-469 (mechanism)
Callear and Smith NATUA-1967-213-382
Hancock and Smith CHPLB-1969-3-573 (review)
Homann, et al. BBPCA-1968-72-998
McGarvey and McGrath PRLAA-1964-278-490 (mechanism)
Myerson, et al. JCPSA-1957-26-1309 (mechanism)
Pollack, M. A. APPLA-1966-8-237 (mechanism)
Sharma, et al. JCPSA-1965-43-2155
Sheen, D. B. JCPSA-1970-52-648
Westenberg, A. A. SCIEA-1969-164-381 (review)
Wright, F. J. JPCHA-1960-64-1648 (mechanism)



Arnold and Kimbell
 Arnold and Kimbell
 Callear and Smith
 Hancock and Smith
 Harteck and Reeves
 Homann, et al.
 Jeffers and Wiswall
 Myerson, et al.
 Olszyna and Heicklen
 Rosenwaks and Yatsiv
 Smith, I. W. M.
 Smith, I. W. M.
 Stuart, et al.
 Stuart, et al.
 Westenberg and deHaas
 Wittig, et al.
 Wittig, et al.
 Wood and Heicklen
 Wood and Heicklen

APPLA-1969-15-351 (mechanism)
 CHPLB-1969-3-469 (mechanism)
 NATUA-1967-213-382
 CHPLB-1969-3-573 (review)
 BSCBA-1962-71-682
 BBPCA-1968-72-998
 APPLA-1970-17-67
 JCPSA-1957-26-1309 (mechanism)
 JPCHA-1970-74-4188
 CHPLB-1971-9-266 (mechanism)
 DFSOA-1967-44-194
 TFSOA-1968-64-378
 CHPLB-1970-5-519 (mechanism)
 CHPLB-1970-7-337 (mechanism)
 JCPSA-1969-50-707
 APPLA-1970-16-117 (mechanism)
 NATUA-1970-226-845 (mechanism)
 JPCHA-1971-75-854
 JPCHA-1971-75-861



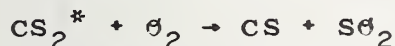
Wood and Heicklen

JPCHA-1971-75-854



Azatyany, et al.
 Myerson, et al.
 Taylor and Myerson

DKPCA-1964-158-869 (related paper)
 JCPSA-1957-26-1309 (mechanism)
 SYMCA-1959-7-72 (related paper)



de Sargo, et al.
 Wood and Heicklen

CJCHA-1965-43-1886
 JPCHA-1971-75-854



Semenoff and Voronkov
 Voronkov and Semenov

ACPYA-1940-12-831 (related paper)
 ZFKHA-1939-13-1695 (related paper)



Myerson and Taylor
 Taylor and Myerson
 Thompson, H. W.

JACSA-1953-75-4348
 SYMCA-1959-7-72
 ZPCBA-1930-10-273 (related paper)



Porter, G.
 Wright, F. J.

PRLAA-1950-200-284
 JPCHA-1960-64-1648 (mechanism)



Breckenridge, W. H., Jr. DABBB-1969-30-1063



Basco and Pearson
 Breckenridge, W. H., Jr. DABBB-1969-30-1063

TFSOA-1967-63-2684
 DABBB-1969-30-1063



Wood and Heicklen

JPCHA-1971-75-861



Wright, F. J.

JPCHA-1960-64-1648 (mechanism)



Myerson, et al

JCPSA-1957-26-1309 (mechanism)

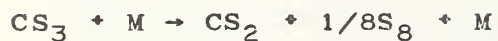


Arnold, et al.

JPCHA-1970-74-8

Basco and Pearson

TFSOA-1967-63-2684



Breckenridge, W. H., Jr. DABBB-1969-30-1063



Basco and Pearson

TFSOA-1967-63-2684

II(b). REVIEWS

Cottrell and McCoubrey

B00KA-1961-95 (vibrational relaxation)

Gunning and Strausz

ADPCA-1966-4-143

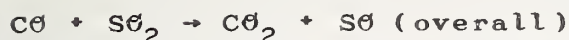
Herzfeld and Litovitz

B00KA-1959-250 (vibrational relaxation)

Troe and Wagner

BBPCA-1967-71-937

III(a). REACTIONS OF SULFUR, SULFUR HYDRIDES AND SULFUR OXIDES



Bauer, et al.

SYMCA-1971-13-417



Bauer, et al.

SYMCA-1971-13-417



Bauer, et al.

SYMCA-1971-13-417



Bauer, et al.

SYMCA-1971-13-417 (mechanism)



Darwent and Roberts

DFSOA-1953-14-55



Yokota, T.

DABSA-1969-29-4136



Burcat, et al.

JCPSA-1968-49-1449



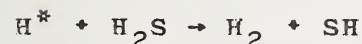
Pyper and Newbury

JCPSA-1970-52-1966



Compton, et al.
Cupitt and Glass
Darwent and Krasnansky
Darwent and Roberts
Darwent and Roberts
Darwent, et al.
Darwent, et al.
Dzantiev, et al.
Forbes, et al.
Fowles, et al.
Gann and Dubrin
Kurylo, et al.
Levy and Merryman
Liuti, et al.
Mihelcic and Schindler
Norrish and Zeelenberg
Perner and Franken
Stein, N. O.
Wadlinger and Darwent
Woolley and Cvetanovic
Yokota, T.
Zeelenberg, A. P.

JPCHA-1969-73-1158
TFSOA-1970-66-3007
SYMCA-1959-7-3
DFSOA-1953-14-55
PRLAA-1953-216-344 (mechanism)
13DFA-1961-14
JPCHA-1967-71-2346
KHKVA-1968-2-571
JACSA-1938-60-1431 (mechanism)
JACSA-1967-89-1352
JCPSA-1967-47-1867
JCPSA-1971-54-943
CBFMA-1965-9-229
JACSA-1966-88-3212 (mechanism)
BBPCA-1970-74-1280
PRLAA-1957-240-293 (related paper)
BBPCA-1969-73-897
TFSOA-1933-29-583 (mechanism)
JPCHA-1967-71-2057
JCPSA-1969-50-4697
DABSA-1969-29-4136
SYMCA-1959-7-68 (related paper)



Yokota, T.

DABSA-1969-29-4136

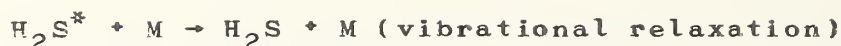


Dzantiev, et al.
Dzantiev, et al.

KHKVA-1970-4-361
KHKVA-1970-4-545

$H + HS\dot{O}_2 \rightarrow H_2 + S\dot{O}_2$	Halstead and Jenkins	TFSOA-1969-65-3013
$H + SH \rightarrow H_2 + S$	Cupitt and Glass Fair and Thrush Mayer and Schieler Mihelcic and Schindler	TFSOA-1970-66-3007 TFSOA-1969-65-1557 JPCHA-1968-72-236 (calculation) BBPCA-1970-74-1280
$H + S\dot{O}_2 + M \rightarrow HS\dot{O}_2 + M$	Fair and Thrush Fenimore and Jones Halstead and Jenkins Kallend, A. S. Kallend, A. S. Kallend, A. S. Schofield, K. Webster and Walsh Wheeler, R.	TFSOA-1969-65-1550 JPCHA-1965-69-3593 TFSOA-1969-65-3013 JPCHA-1966-70-2055 TFSOA-1967-63-2442 CBFMA-1969-13-324 PLSSA-1967-15-643 SYMCA-1965-10-463 JPCHA-1968-72-3359
$H + S\dot{O}_3 \rightarrow \dot{O}H + S\dot{O}_2$	Fenimore and Jones Merryman and Levy	JPCHA-1965-69-3593 SYMCA-1971-13-427
$H_2 + S \rightarrow H + SH$	Mayer and Schieler	JPCHA-1968-72-236
$H_2 + S^* \rightarrow H + SH$	Donovan, et al.	TFSOA-1970-66-774
$H_2 + S + h\nu \rightarrow H_2S$	Norrish and Rideal	JCSOA-1924-125-2070
$H_2 + S (+ M) \rightarrow H_2S (+ M)$	Aynsley and Robinson Aynsley, et al. Aynsley, et al. Bodenstein, M. Norrish and Rideal Norrish and Rideal Norrish and Rideal Porret, D. Reinhold, et al.	JCSOA-1935-351 NATUA-1933-131-471 JCSOA-1935-58 ZFPCA-1899-29-315 JCSOA-1923-123-696 JCSOA-1923-123-1689 JCSOA-1924-125-2070 HCACA-1936-19-680 ZPCAA-1939-184-273
$H_2 + S^* (+ M) \rightarrow H_2S^* (+ M)$	Fowles, et al. Gunning and Strausz	JACSA-1967-89-1352 ADPCA-1966-4-143 (mechanism)
$H_2 + S\dot{O}_3 \rightarrow H_2\dot{O} + S\dot{O}_2$	Levy and Merryman	CBFMA-1965-9-229
$H_2 + S_2 \rightarrow H_2S + S$	Aynsley, et al. Porret, D.	JCSOA-1935-58 (mechanism) HCACA-1936-19-680
$H_2 + S_2 \rightarrow H_2S_2^*$	Majerik, J. W.	DABBB-1970-31-555

$H_2 + S_6 \rightarrow H_2S + S_5$	Porret, D.	HCACA-1936-19-680
$H_2O + NO_2 + O_2 + RH + SO_2 \rightarrow \dots$	Urone, et al.	ESTHA-1968-2-611
$H_2O + NO_2 + O_2 + RH + SO_2 + h\nu \rightarrow \dots$	Urone, et al.	ESTHA-1968-2-611
$H_2O + O_2 + SO_2 \rightarrow \dots$	Urone, et al.	ESTHA-1968-2-611
$H_2O + O_2 + SO_2 + h\nu \rightarrow \dots$	Urone, et al.	ESTHA-1968-2-611
$H_2O + SO + S_2O_2 \rightarrow H_2S + SO_2 + SO_2$	Emanuel, N. M.	IANKA-1942-221
$H_2S + h\nu \rightarrow H + SH$	Compton, et al. Darwent, B. deB. Darwent and Krasnansky Darwent and Roberts Darwent, et al. Dzantiev and Shishkov Forbes, et al. Fowles, et al. McGarvey and McGrath Majerik, J. W. Norrish and Zeelenberg Porter, G. Stein, N. O. Wadlinger and Darwent Zeelenberg, A. P.	JPCHA-1969-73-1158 DFSOA-1953-14-123 SYMCA-1959-7-3 (quantum yield) PRLAA-1953-216-344 13DFA-1961-14 KHKVA-1967-1-192 JACSA-1938-60-1431 JACSA-1967-89-1352 PRLAA-1964-278-490 (related paper) DABRB-1970-31-555 (mechanism) PRLAA-1957-240-293 (related paper) DFSOA-1953-14-123 TFSOA-1933-29-583 (quantum yield) JPCHA-1967-71-2057 SYMCA-1959-7-68 (related paper)
$H_2S + h\nu \rightarrow H_2 + S$	Compton, et al.	JPCHA-1969-73-1158
$H_2S + h\nu \rightarrow H_2 + S^*$	Stein, N. O.	TFSOA-1933-29-583 (quantum yield)
$H_2S (+ M) \rightarrow H + SH (+ M)$	Levy and Merryman	CBFMA-1965-9-229
$H_2S^* (+ M) \rightarrow H + SH (+ M)$	Gunning and Strausz	ADPCA-1966-4-143 (mechanism)
$H_2S (+ M) \rightarrow H_2 + 1/2 S_2 (+ M)$	Darwent and Roberts	PRLAA-1953-216-344
$H_2S^* + M \rightarrow H_2S + M$ (rotational relaxation)	Bauer, et al. Geide, K.	PHYSA-1970-47-109 ACUSA-1963-13-31



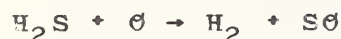
Bauer, et al.
Shields, F. D.

PHYSA-1970-47-109
JASMA-1969-45-481



Westbury and Winkler

CJCHA-1960-38-334



Bradley, J. N.
Bradley and Dobson
Bradley and Dobson
Sachyan, et al.
Sharma, et al.
Sharma, et al.

TFSOA-1967-63-2945 (mechanism)
JCPSA-1967-46-2865
JCPSA-1967-46-2872
DKPCA-1967-175-647
JCPSA-1965-43-2155 (mechanism)
JPCHA-1967-71-1602



Bradley, J. N.
Bradley and Dobson
Bradley and Dobson
Cupitt and Glass
Hollinden, et al.
Levy and Merryman
Liuti, et al.
Merryman and Levy
Norrish and Zeelenberg
Sachyan, et al.
Takahashi, S.
Zeelenberg, A. P.

TFSOA-1967-63-2945 (mechanism)
JCPSA-1967-46-2865
JCPSA-1967-46-2872
TFSOA-1970-66-3007
JPCHA-1970-74-988
CBFMA-1965-9-229
JACSA-1966-88-3212
JPCAA-1967-17-800
PRLAA-1957-240-293 (related paper)
DKPCA-1967-175-647
MDPCA-1970-10-369
SYMCA-1959-7-68 (related paper)



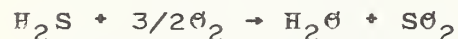
Bradley, J. N.
Bradley and Dobson
Bradley and Dobson
Levy and Merryman
Levy and Merryman
Zeelenberg, A. P.

TFSOA-1967-63-2945 (mechanism)
JCPSA-1967-46-2865
JCPSA-1967-46-2872
CBFMA-1965-9-229
JEP OA-1965-87-116
SYMCA-1959-7-68 (related paper)



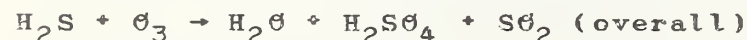
Levy and Merryman

JEP OA-1965-87-116



Chamberlin and Clarke
Emanuel, N. M.
Emanuel, N. M.
Emanuel, N. M.
Emanuel, N. M.
Emanuel, N. M.
Emanuel, et al.
Farkas, L.
Levy and Merryman
Markovich and Emanuel
Markovich and Emanuel
Pavlov, et al.
Semenov and Emanuel
Taylor and Livingston
Thompson, H. W.
Thompson and Kelland
Yakovlev and Shantarovich

IECHA-1928-20-1016 (related paper)
ZFKHA-1940-14-863
CRAUA-1942-35-250
CRAUA-1942-36-145
ACPYA-1944-19-360
ZFKHA-1945-19-15
CRAUA-1940-28-618
ZEELA-1931-37-670
JEP OA-1963-85-229 (review)
ZFKHA-1947-21-1251
ZFKHA-1947-21-1259
IANKA-1942-98
CRAUA-1940-28-219
JPCHA-1931-35-2676
NATUA-1931-127-629
JCSOA-1931-1809
ACPYA-1937-6-71



Gregor and Martin

AJCHA-1961-14-462 (related paper)

$H_2S + O_3 \rightarrow H_2O + SO_2$	Cadle and Ledford Gregor and Martin Hales, J. M. Hales, et al.	AWP0A-1966-10-25 AJCHA-1961-14-462 (related paper) DABSA-1968-29-985 ATENB-1969-3-657
$H_2S + S^* \rightarrow H_2 + S_2$	Stein, N. O.	TFS0A-1933-29-583 (mechanism)
$H_2S + 1/2SO_2 \rightarrow H_2O + 3/2S$	Taylor and Wesley	JPCHA-1927-31-216
$H_2S_2^* \rightarrow H_2 + S_2$	Majerik, J. W. Perner and Franken	DABBB-1970-31-555 BBPCA-1969-73-897
$H_2S_2^* \rightarrow SH + SH$	Majerik, J. W.	DABBB-1970-31-555
$H_2S_2 + h\nu \rightarrow SH + SH$	Strausz, et al.	BBPCA-1968-72-253 (mechanism)
$H_2S_2^* + M \rightarrow H_2S_2 + M$	Majerik, J. W.	DABBB-1970-31-555 (mechanism)
$HSO_2 + OH \rightarrow H_2O + SO_2$	Halstead and Jenkins	TFS0A-1969-65-3013
$N + SO \rightarrow NO + S$	Liuti, G.	AANLA-1968-45-358
$N_2O + S^* \rightarrow N_2 + SO$	Breckenridge and Taube	JCPSCA-1970-53-1750
$N_2O + SO_2 \rightarrow N_2 + SO_3$ (overall)	Bell, et al. Reuben, et al.	JCS0A-1955-1440 SYMCA-1962-8-97
$N_2O_5 + SO_2 \rightarrow 2NO_2 + SO_3$	Wilson, et al.	*APCPZ-1970-70-115 (mechanism)
$NO + O_2 + SO_2 \rightarrow NO_2 + SO_3 + \dots$ (overall)	Tipper and Williams	TFS0A-1961-57-79
$NO + O_2 + SO_2 (+ H_2O + hydrocarbons) + h\nu \rightarrow \dots$	Wilson and Levy	JPCAA-1970-20-385 (mechanism)
$NO + S + M \rightarrow NOS + M$	Basco and Pearson	TFS0A-1967-63-2684
$3NO_2 + H_2O + 2SO_2 \rightarrow NO + 2NOHSO_4$	Stopperka, et al.	ZAACA-1968-359-14

$\text{NO}_2 + \text{SO} \rightarrow \text{NO} + \text{SO}_2$	
Clyne, et al.	PRLAA-1966-295-355
$\text{NO}_2 + \text{SO}_2 \rightarrow \text{NO} + \text{SO}_3$	
Armitage and Cullis	CBFMA-1971-16-125
Boreskov and Ilarionov	ZFKHA-1940-14-1428
Cullis, et al.	PRLAA-1966-295-72
Kerr, J. A.	CSAAA-1967-64-73 (review)
Shaw and Green	NATUA-1966-211-1171
Urone, et al.	ESTRA-1968-2-611 (related paper)
Wilson, et al.	*APCPZ-1970-70-115 (mechanism)
$\text{NO}_2 + \text{SO}_2 (+ \text{M}) \rightarrow \dots$	
Ripperton, et al.	ACSRA-1965-150-19.X
Ripperton, et al.	ACSRA-1964-147-20.R
Tipper and Williams	TFSOA-1961-57-79
Wilson and Levy	JPCAA-1970-20-385
$\text{NO}_2 + \text{SO}_3 \rightarrow \text{NO}_3 + \text{SO}_2$	
Wilson, et al.	*APCPZ-1970-70-115 (mechanism)
$\text{NO}_3 + \text{SO}_2 \rightarrow \text{NO}_2 + \text{SO}_3$	
Cullis, et al.	PRLAA-1966-295-72
$\text{NCS} + \text{S} \rightarrow \text{NO} + \text{S}_2$	
Basco and Pearson	TFSOA-1967-63-2684
$\text{O} + \text{S} + \text{M} \rightarrow \text{SO} + \text{M}^*$ (chemiexcitation)	
Tewarson and Palmer	SYMCA-1971-13-99 (mechanism)
$\text{O} + \text{S} + \text{M} \rightarrow \text{SO}^* + \text{M}$ (chemiexcitation)	
Fair and Thrush	TFSOA-1969-65-1557
$\text{O} + \text{SH} \rightarrow \text{H} + \text{SO}$	
Cupitt and Glass	TFSOA-1970-66-3007
Liuti, et al.	JACSA-1966-88-3212 (mechanism)
Takahashi, S.	MDPCA-1970-10-369
$\text{O} + \text{SO} \rightarrow \text{SO}_2 + h\nu$	
Cohen and Gross	JCPSA-1969-50-3119
Fletcher and Levitt	TFSOA-1969-65-1544
Gaydon, A. G.	PRLAA-1934-146-901 (mechanism)
Harteck and Reeves	BSCBA-1962-71-682
Herman, et al.	JQSRA-1962-2-215 (mechanism)
Liuti, G.	AANLA-1968-45-358 (mechanism)
Reeves and Emerson	JCPSA-1970-52-2161 (mechanism)
Rolfes, et al.	JPCA-1965-69-849
Sharma, et al.	JCPSA-1965-43-2155 (mechanism)
Sharma, et al.	JPCA-1967-71-1602
Takahashi, S.	MDPCA-1970-10-369
Williams, D. J.	CBFMA-1968-12-165
Zeelenberg, A. P.	SYMCA-1959-7-68 (mechanism)
$\text{O} + \text{SO} + \text{M} \rightarrow \text{SO}_2 + \text{M}$	
Bauer, S. H.	ARPLA-1965-16-245 (review)
Gaydon, A. G.	PRLAA-1934-146-901 (mechanism)
Gaydon, et al.	PRLAA-1963-276-461 (mechanism)
Halstead and Thrush	PHCBA-1965-4-1007
Halstead and Thrush	PRLAA-1966-295-363
Kerr, J. A.	CSAAA-1967-64-73 (review)

$\text{O} + \text{SO} + \text{M} \rightarrow \text{SO}_2 + \text{M}$ (Continued)

McGarvey and McGrath	PRLAA-1964-278-490 (related paper)
Norrish and Oldershaw	PRLAA-1959-249-498 (related paper)
Sharma, et al.	JPCA-1967-71-1602
Takahashi, S.	MDPCA-1970-10-369
Zeelenberg, A. P.	SYMCA-1959-7-68 (related paper)

$\text{O} + \text{SO} + \text{M} \rightarrow \text{SO}_2^* + \text{M}$ (chemiexcitation)

Bradley and Dobson	JCPA-1967-47-1555
Fletcher and Levitt	TFSOA-1969-65-1544 (mechanism)
Halstead and Thrush	NATUA-1964-204-992 (mechanism)
Halstead and Thrush	PRLAA-1966-295-363
McGarvey and McGrath	PRLAA-1964-278-490 (related paper)
Melliard-Smith, et al.	JCSIA-1971-606 (mechanism)
Norrish and Zeelenberg	PRLAA-1957-240-293 (related paper)
Rolfes, et al.	JPCA-1965-69-849 (mechanism)
Takahashi, S.	MDPCA-1970-10-369

$\text{O} + \text{SO} + \text{M} \rightarrow \text{SO}_2^* + \text{M}^*$ (chemiexcitation)

Melliard-Smith, et al.	JCSIA-1971-606 (mechanism)
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$\text{O} + \text{SO}_2 \rightarrow \text{O} + \text{SO}_2$ (exchange)

Clark, et al.	JCPA-1970-52-4692
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$\text{O} + \text{SO}_2 + \text{M} \rightarrow \text{SO}_3 + \text{M}$

Baldwin, R. R.	SYMCA-1965-10-470
Bell, et al.	JCSOA-1955-1440
Cadle and Powers	TELLA-1966-18-176
Dooley and Whittingham	TFSOA-1946-42-354 (related paper)
Driscoll and Warneck	JPCA-1968-72-3736
Fenimore and Jones	JPCA-1965-69-3593
Halstead and Thrush	PHCBA-1965-4-1007
Halstead and Thrush	PRLAA-1966-295-363
Hedley, A. B.	FUSJA-1962-13-45
Hedley, A. B.	*PICFZ-1963-204
Jakovleva and Kondratjew	ACPYA-1940-13-241 (mechanism)
Kaufman, F.	PRLAA-1958-247-123
Levy and Merryman	CBFMA-1965-9-229
Levy and Merryman	JEPJA-1963-85-229 (review)
Levy and Merryman	JEPJA-1965-87-116
Levy and Merryman	JEPJA-1965-87-374
Merryman and Levy	SYMCA-1971-13-427
Mulcahy, et al.	SYMCA-1969-12-323
Mulcahy, et al.	JPCA-1967-71-2124
Myerson, et al.	JCPA-1957-26-1309 (mechanism)
Nettleton and Stirling	SYMCA-1969-12-635
Reuben, et al.	SYMCA-1962-8-97
Schofield, K.	PLSSA-1967-15-643
Sullivan, et al.	NASCA-1961-N62-15918
Thrush, B. A.	SYMCA-1965-10-470
Tipper and Williams	TFSOA-1960-56-1805
Walsh, A. D.	SYMCA-1965-10-470
Webster and Walsh	SYMCA-1965-10-463
Whittingham, G.	18MNA-1947-4-591 (related paper)
Whittingham, G.	SYMCA-1949-3-453 (related paper)

$\text{O} + \text{SO}_2 (+ \text{M}) \rightarrow \text{SO}_3^* (+ \text{M})$

Jaffe and Klein	TFSOA-1966-62-2150
Tipper and Williams	TFSOA-1960-56-1805 (mechanism)

$\text{O} + \text{SO}_3 \rightarrow \text{O}_2 + \text{SO}_2$

Fenimore and Jones	JPCA-1965-69-3593
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$\text{O} + \text{SO}_3 \rightarrow \text{O}_2 + \text{SO}_2$ (Continued)

Merryman and Levy	SYMCA-1971-13-427
Nettleton and Stirling	SYMCA-1969-12-635
Norrish and Oldershaw	PRLAA-1959-249-498 (related paper)
$\text{O} + \text{S}_2 \rightarrow \text{S} + \text{SO}$	
Homann, et al.	BBPCA-1968-72-998
$\text{OH} + \text{OH} + \text{SO}_2 \rightarrow \text{H}_2\text{O} + \text{SO}_3$	
McAndrew and Wheeler	JPCA-1962-66-229
$\text{OH} + \text{SO} \rightarrow \text{H} + \text{SO}_2$	
Cupitt and Glass	TFSOA-1970-66-3007
Fair and Thrush	TFSOA-1969-65-1557
$\text{OH} + \text{SH} \rightarrow \text{H}_2 + \text{SO}$	
Zeelenberg, A. P.	SYMCA-1959-7-68 (mechanism)
$\text{O}_2 + \text{S} \rightarrow \text{O} + \text{SO}$	
Cupitt and Glass	TFSOA-1970-66-3007
Davis and Pilling	ACSRA-1971-162-Phys. Chem. 6
Fair and Thrush	TFSOA-1969-65-1557
Fair, et al.	CJCHA-1971-49-1659
Gregg and Thomas	JAPIA-1968-39-4399 (mechanism)
Hancock and Smith	CHPLB-1969-3-573 (mechanism)
Harteck and Reeves	BSCBA-1962-71-682
Homann, et al.	BBPCA-1968-72-998
Homann, et al.	BBPCA-1969-73-967
McGarvey and McGrath	PRLAA-1964-278-490 (related paper)
Myerson, et al.	JCPA-1957-26-1309 (mechanism)
Pollack, M. A.	APPLA-1966-8-237 (mechanism)
Wittig, et al.	NATUA-1970-226-845 (mechanism)
Wright, F. J.	JPCA-1960-64-1648 (mechanism)
$\text{O}_2 + \text{S} \rightarrow \text{SO}_2 + \text{SO}_3$ (overall)	
Semenoff and Rjabinin	ZPCBA-1928-1-192 (related paper)
$\text{O}_2 + \text{S} + \text{M} \rightarrow \text{SO}_2 + \text{M}$	
Norrish and Rideal	JCSOA-1923-123-1689
Norrish and Rideal	JCSOA-1923-123-3202
$\text{O}_2 + \text{S}^* + \text{M} \rightarrow \text{SO}_2 + \text{M}$	
Kondrat'ev and Yakovleva	ZETFA-1940-10-1038 (mechanism)
$\text{O}_2 + \text{SH} \rightarrow \text{OH} + \text{SO}$	
Bradley, J. N.	TFSOA-1967-63-2945 (mechanism)
Bradley and Dobson	JCPA-1967-46-2865
Bradley and Dobson	JCPA-1967-46-2872
McGarvey and McGrath	PRLAA-1964-278-490 (related paper)
Norrish and Zeelenberg	PFLAA-1957-240-293 (related paper)
Zeelenberg, A. P.	SYMCA-1959-7-68 (related paper)
$\text{O}_2 + \text{SO} (+ \text{M}) \rightarrow \text{O} + \text{SO}_2 (+ \text{M})$	
Bradley, J. N.	TFSOA-1967-63-2945 (review)
Bradley and Dobson	JCPA-1967-46-2865
Bradley and Dobson	JCPA-1967-46-2872
Driscoll and Warneck	JPCA-1968-72-3736
Harteck and Reeves	BSCBA-1962-71-682
Homann, et al.	BBPCA-1968-72-998

$\text{O}_2 + \text{SO} (+ \text{M}) \rightarrow \text{O} + \text{SO}_2 (+ \text{M})$ (Continued)

Homann, et al.	BBPCA-1969-73-967
Levy and Merryman	CBFMA-1965-9-229
Levy and Merryman	JEPGA-1965-87-374
McGarvey and McGrath	PRLAA-1964-278-490 (related paper)
Merryman and Levy	JPCAA-1967-17-800
Myerson and Taylor	JCPSA-1957-26-1309 (mechanism)
Norrish and Oldershaw	PRLAA-1959-249-498 (related paper)
Norrish and Zeelenberg	PRLAA-1957-240-293 (related paper)
Sachyan, et al.	DKPCA-1967-175-647 (mechanism)
Sheen, D. B.	JCPSA-1970-52-648
Williams, D. J.	CBFMA-1968-12-165
Wood and Heicklen	JPCHA-1971-75-861
Zeelenberg, A. P.	SYMCA-1959-7-68 (related paper)

$1/2\text{O}_2 + \text{SO} (+ \text{M}) \rightarrow \text{SO}_2 (+ \text{M})$

Gaydon, et al.	PRLAA-1963-276-461
Levy and Merryman	JEPGA-1965-87-116

$\text{O}_2 + \text{SO} + \text{M} \rightarrow \text{SO}_3 + \text{M}$

Driscoll and Warneck	JPCHA-1968-72-3736
Levy and Merryman	CBFMA-1965-9-229
Levy and Merryman	JEPGA-1965-87-374
Myerson, et al.	JCPSA-1957-26-1309 (mechanism)
Norrish and Oldershaw	PRLAA-1959-249-498 (related paper)
Wood and Heicklen	JPCHA-1971-75-854
Wood and Heicklen	JPCHA-1971-75-861

$\text{O}_2 + \text{SO}_2^* \rightarrow \text{O} + \text{SO}_3$

Driscoll and Warneck	JPCHA-1968-72-3736
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$\text{O}_2 + \text{SO}_2^* \rightarrow \text{SO}_4$

Blacet, F. E.	IECHA-1952-44-1339 (mechanism)
Dunham, S. B.	NATUA-1960-188-51 (mechanism)
Gerhard and Johnstone	IECHA-1955-47-972
Katz and Gale	*IUAPZ-1970-CP-1E
Shirai, et al.	KGKZA-1962-65-1906 (mechanism)

$1/2\text{O}_2 + \text{SO}_2 + h\nu \rightarrow \text{SO}_3$ (overall)

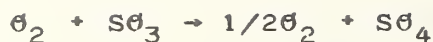
Arin, et al.	*GCABZ-1969-RPT/GCA-TR-69-12-G
Chen, S. W.	HHHPA-1958-24-187
Coehn, A.	ZEELA-1907-13-545
Coehn and Becker	ZEPGA-1910-70-88
Cox and Penkett	ATENB-1970-4-341
Kornfeld and Weegman	ZEELA-1930-36-789
Shirai, et al.	KGKZA-1962-65-1906
Sullivan, et al.	NASCA-1961-RPT/GCA-TR-61-17-N

$\text{O}_2 + \text{SO}_2 + \text{M} \rightarrow \dots$

Cullis, et al.	CBFMA-1967-11-150
Urone, et al.	ESTHA-1968-2-611 (related paper)

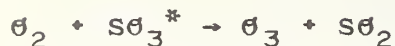
$1/2\text{O}_2 + \text{SO}_2 + \text{M} \rightarrow \text{SO}_3 + \text{M}$

Cox and Penkett	ATENB-1970-4-341
Cullis, et al.	PRLAA-1966-295-72
Levy and Merryman	JEPGA-1963-85-229 (review)
Levy and Merryman	JEPGA-1965-87-116
Merryman and Levy	SYMCA-1971-13-427
Nikolov, et al.	JAPUA-1970-43-2340



Katz and Gale

*IUAPZ-1970-CP-1E



Tipper and Williams

TFSOA-1960-56-1805 (mechanism)



Katz and Gale

*IUAPZ-1970-CP-1E



Blacet, F. E.

Dunham, S. B.

Shirai, et al.

IECHA-1952-44-1339 (mechanism)

NATUA-1960-188-51 (mechanism)

KGKZA-1962-65-1906 (mechanism)



Kondratjew, V. N.

ACPYA-1942-16-272 (mechanism)



Halstead and Thrush

Halstead and Thrush

Halstead and Thrush

Halstead and Thrush

Homann, et al.

McKenzie and Thrush

Mettee, H. D.

Olczyna and Heicklen

Schofield, K.

Thrush, B. A.

Thrush, et al.

NATUA-1964-204-992

CCOMA-1965-213

PHCBA-1965-4-1007

PRLAA-1966-295-380 (mechanism)

BBPCA-1969-73-967

PRLAA-1968-308-133

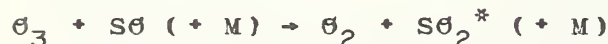
JACSA-1968-90-2972

JPCHA-1970-74-4188 (mechanism)

PLSSA-1967-15-643

CHMBA-1966-2-287

JPCHA-1968-72-3711



Halstead and Thrush

Halstead and Thrush

Halstead and Thrush

Mettee, H. D.

Schofield, K.

Thrush, B. A.

Thrush, et al.

CCOMA-1965-213

PHCBA-1965-4-1007

PRLAA-1966-295-380

JACSA-1968-90-2972

PLSSA-1967-15-643

CHMBA-1966-2-287

JPCHA-1968-72-3711

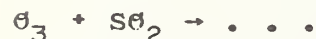


Wilson and Levy

Wilson, et al.

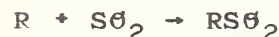
JPCAA-1970-20-385

*APCPZ-1970-70-115 (mechanism)



Ripperton, et al.

ACSPA-1964-147-20.R

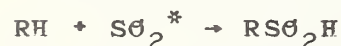


Good and Thynne

Good and Thynne

TFSOA-1967-63-2708

TFSOA-1967-63-2720



Badcock, et al.

Dainton and Ivin

Sidebottom, et al.

Timmons, R. B.

JACSA-1971-93-3115

TFSOA-1950-46-374

JACSA-1971-93-3121

PHCBA-1970-12-219



Good and Thynne
Good and Thynne

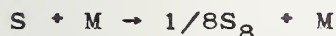
TFSOA-1967-63-2708
TFSOA-1967-63-2720



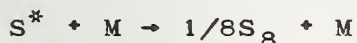
Breckenridge, W. H., Jr.	DABBB-1969-30-1063
Breckenridge and Taube	JCPSA-1970-53-1750
Donovan, R. J.	TFSOA-1969-65-1419
Donovan, et al.	NATUA-1969-222-1164
Donovan, et al.	TFSOA-1970-66-774
Fair, et al.	CJCHA-1971-49-1659
Knight, et al.	JACSA-1963-85-2349
Knight, et al.	JACSA-1964-86-4243
Lown, et al.	JACSA-1967-89-1056
McGrath, et al.	CJCHA-1967-45-2454 (mechanism)



Fowles, et al.	JACSA-1967-89-1352 (mechanism)
Gunning and Strausz	ADPCA-1966-4-143 (mechanism)
Sidhu, et al.	JACSA-1966-88-254



Breckenridge and Taube	JCPSA-1970-53-1750
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Breckenridge and Taube	JCPSA-1970-53-1750
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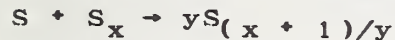
Bodenstein, M.	ZEPCA-1899-29-315 (mechanism)
Callear, A. B.	PRLAA-1963-276-401
Fowles, et al.	JACSA-1967-89-1352
Knight, et al.	JACSA-1963-85-1207 (mechanism)
Knight, et al.	JACSA-1963-85-2349 (mechanism)
Knight, et al.	JACSA-1964-86-4243 (mechanism)
Norrish and Rideal	JCSOA-1923-123-1689 (mechanism)
Porret, D.	HCACA-1936-19-680 (mechanism)
Porter, G.	DFSOA-1953-14-123 (mechanism)



Tewarson and Palmer	SYMCA-1971-13-99 (mechanism)
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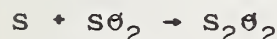
Fair and Thrush	DFSOA-1967-44-236
Fair and Thrush	TFSOA-1969-65-1208
Tewarson and Palmer	SYMCA-1971-13-99 (mechanism)



Aynsley, et al.	JCSOA-1935-58 (mechanism)
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Fair and Thrush	TFSOA-1969-65-1557
Mihelcic and Schindler	BBPCA-1970-74-1280



Jakovleva and Kondratjew	ACPYA-1940-13-241 (mechanism)
Kondratjew, V. N.	ACPYA-1942-16-272 (mechanism)



Fowles, et al.

JACSA-1967-89-1352 (mechanism)



Darwent, B. deB.
Darwent and Roberts
Darwent, et al.
Dzantiev and Shishkov
Fair and Thrush
Fowles, et al.
Gunning and Strausz
Mihelcic and Schindler
Norrish and Zeelenberg
Perner and Franken
Porter, G.
Stein, N. O.
Strausz, et al.

DFSØA-1953-14-123 (mechanism)
PRLAA-1953-216-344
JPCHA-1967-71-2346 (mechanism)
KHVKA-1967-1-192
TFSØA-1969-65-1557
JACSA-1967-89-1352
ADPCA-1966-4-143 (mechanism)
BBPCA-1970-74-1280
PRLAA-1957-240-293 (related paper)
BBPCA-1969-73-897
DFSØA-1953-14-123 (mechanism)
TFSØA-1933-29-583 (mechanism)
BBPCA-1968-72-253



Strausz, et al.

BBPCA-1968-72-253



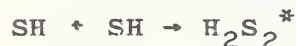
Darwent, B. deB.
Darwent and Roberts
Darwent, et al.
Dzantiev and Shishkov
Fair and Thrush
Forbes, et al.
Fowles, et al.
Mihelcic and Schindler
Porter, G.
Strausz, et al.

DFSØA-1953-14-123 (mechanism)
PRLAA-1953-216-344
JPCHA-1967-71-2346 (mechanism)
KHVKA-1967-1-192
TFSØA-1969-65-1557
JACSA-1938-60-1431 (mechanism)
JACSA-1967-89-1352
BBPCA-1970-74-1280
DFSØA-1953-14-123 (mechanism)
BBPCA-1968-72-253



Forbes, et al.
Fowles, et al.

JACSA-1938-60-1431 (mechanism)
JACSA-1967-89-1352



Majerik, J. W.
Perner and Franken

DABBB-1970-31-555
BBPCA-1969-73-897 (calculation)



Kornfeld and McCaig
Wieland, K.

TFSØA-1934-30-991 (mechanism)
TFSØA-1934-30-260 (mechanism)



Breckenridge and Miller
Carrington, et al.

ACSRA-1971-162-Phys. Chem. 87
TFSØA-1966-62-2994



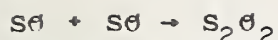
Tewarson and Palmer

SYMCA-1971-13-99 (mechanism)

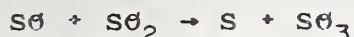


Donovan, et al.
Halstead and Thrush
Halstead and Thrush
Hoyermann, et al.
Sullivan and Warneck
Tewarson and Palmer

TFSØA-1969-65-2930
PHCBA-1965-4-1007
PRLAA-1966-295-363
BBPCA-1967-71-603
BBPCA-1965-69-7
SYMCA-1971-13-99 (mechanism)



Jakovleva and Kondratjew	ACPYA-1940-13-241 (mechanism)
Markovich and Emanuel	ZFKHA-1947-21-1251 (mechanism)
Norrish and Eldershaw	PRLAA-1959-249-498 (related paper)
Norrish and Zeelenberg	PRLAA-1957-240-293 (related paper)
Zeelenberg, A. P.	SYMCA-1959-7-68 (related paper)



Bauer, et al.	SYMCA-1971-13-417 (mechanism)
Kornfeld and McCaig	TFSOA-1934-30-991 (mechanism)



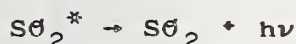
Halstead and Thrush	PHCBA-1965-4-1007
Norrish and Eldershaw	PRLAA-1959-249-498 (related paper)



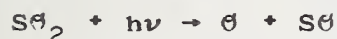
Driscoll and Warneck	JPCHA-1968-72-3736
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Driscoll and Warneck	JPCFA-1968-72-3736
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Badcock, et al.	JACSA-1971-93-3115
Bradley and Dobson	JCPSA-1967-47-1555
Caton and Duncan	JACSA-1968-90-1945
Collier, et al.	JACSA-1970-92-217
Douglas, A. E.	JCPSA-1966-45-1007
Fletcher and Levitt	TFSOA-1969-65-1544 (mechanism)
Gerlovin and Orlova	OPSUA-1964-16-9
Greenough and Duncan	JACSA-1961-83-555
Halstead and Thrush	PHCBA-1965-4-1007
Halstead and Thrush	PRLAA-1966-295-363 (mechanism)
Halstead and Thrush	PRLAA-1966-295-380
LeBreton, et al.	JCPSA-1971-55-2940
Levitt and Sheen	JCPSA-1964-41-584
Levitt and Sheen	TFSOA-1967-63-540
McKenzie and Thrush	PRLAA-1968-308-133
Mettee, H. D.	JACSA-1968-90-2972
Mettee, H. D.	JCPSA-1968-49-1784
Norrish and Zeelenberg	PRLAA-1957-240-293 (related paper)
Okuda, et al.	JPCHA-1969-73-4412 (mechanism)
Otsuka and Calvert	JACSA-1971-93-2581
Rao and Calvert	JPCHA-1970-74-681
Rao, et al.	JACSA-1969-91-1609
Rao, et al.	JACSA-1969-91-1616
Reeves and Emerson	JCPSA-1970-52-2161
Rolfes, et al.	JPCHA-1965-69-849 (mechanism)
Sidebottom, et al.	JACSA-1971-93-2587
Sidebottom, et al.	JACSA-1971-93-3121
Strickler and Howell	JCPSA-1968-49-1947
Thrush, B. A.	CHMBA-1966-2-287
Timmons, R. B.	PHCBA-1970-12-219 (mechanism)



Driscoll and Warneck	JPCHA-1968-72-3736
Herman, et al.	JQSRA-1962-2-215 (mechanism)
Jakovleva and Kondratjew	ACPYA-1940-13-241
Kornfeld and McCaig	TFSOA-1934-30-991 (mechanism)
Norrish and Eldershaw	PRLAA-1959-249-498 (related paper)
Sullivan, et al.	NASCA-1961-N62-15918 (mechanism)
Wieland, K.	TFSOA-1934-30-260 (mechanism)

$\text{SO}_2 + h\nu \rightarrow \text{SO}_2^*$	
Driscoll and Warneck Sullivan, et al.	JPCA-1968-72-3736 NASCA-1961-N62-15918 (mechanism)
$\text{SO}_2 + \text{M} \rightarrow \text{O} + \text{SO} + \text{M}$	
Keck and Kalelkar Levitt and Sheen Olschewski, et al. Trope and Wagner	*AVEVZ-1968-289 (calculation) TFSOA-1967-63-2955 ZPCFA-1965-44-173 JBPCA-1967-71-937
$\text{SO}_2^* + \text{M} \rightarrow \text{O} + \text{SO} + \text{M}$	
Levitt and Sheen	TFSOA-1967-63-540
$\text{SO}_2 + \text{M} \rightarrow \text{SO}_2^* + \text{M}$ (electronic excitation)	
Gaydon, et al. LeBreton, et al.	PRLAA-1963-276-461 JCPSA-1971-55-2940
$\text{SO}_2 + \text{M}^* \rightarrow \text{SO}_2 + \text{M}$ (electronic relaxation)	
Badcock, et al. O'Brien and Myers	JACSA-1971-93-3115 JCPSA-1970-53-3832
$\text{SO}_2 + \text{M}^* \rightarrow \text{SO}_2^* + \text{M}$ (energy transfer)	
Tewarson and Palmer	SYMCA-1971-13-99 (mechanism)
$\text{SO}_2^* + \text{M} \rightarrow \text{SO}_2 + \text{M}$ (electronic relaxation)	
Badcock, et al. Collier, et al. Dainton and Ivin Dainton and Ivin Driscoll and Warneck Fletcher and Levitt Greenough and Duncan Halstead and Thrush Halstead and Thrush Halstead and Thrush Jackson and Calvert Levitt and Sheen Levitt and Sheen McKenzie and Thrush Mettee, H. D. Mettee, H. D. Okuda, et al. Olschewski, et al. Otsuka and Calvert Rao and Calvert Rao, et al. Rao, et al. Rolfes, et al. Shirai, et al. Sidebottom, et al. Sidebottom, et al. Strickler and Howell Thrush, B. A. Timmons, R. B.	JACSA-1971-93-3115 JACSA-1970-92-217 TFSOA-1950-46-374 TFSOA-1950-46-382 JPCA-1968-72-3736 TFSOA-1969-65-1544 (mechanism) JACSA-1961-83-555 PHCBA-1965-4-1007 PRLAA-1966-295-363 (mechanism) PRLAA-1966-295-380 JACSA-1971-93-2593 JCPSA-1964-41-584 TFSOA-1967-63-540 PRLAA-1968-308-133 JCPSA-1968-49-1784 JPCA-1969-73-1071 JPCA-1969-73-4412 ZPCFA-1965-44-173 JACSA-1971-93-2581 JPCA-1970-74-681 JACSA-1969-91-1609 JACSA-1969-91-1616 JPCA-1965-69-849 (mechanism) KGKZA-1962-65-1906 (mechanism) JACSA-1971-93-2587 JACSA-1971-93-3121 JCPSA-1968-49-1947 CHMBA-1966-2-287 PHCBA-1970-12-219
$\text{SO}_2^* + \text{M} \rightarrow \text{SO}_2 + \text{M}$ (vibrational relaxation)	
Bass, et al. Bauer, et al. Cottrell and McCoubrey	JCPSA-1971-54-644 SYMCA-1971-13-417 BOKA-1961-97 (review)

$S\theta_2^* + M \rightarrow S\theta_2 + M$ (vibrational relaxation) (Continued)

Dickens and Linnett	PRLAA-1957-243-84 (calculation)
Fricke, E. F.	JASMA-1940-12-245
Grossmann, E.	ANPYA-1932-13-681
Herzfeld and Litovitz	B00KA-1959-253 (review)
Kneser, H. O.	ANPYA-1933-16-337
Lambert and Salter	PRLAA-1958-243-78
McCoubrey, et al.	PRLAA-1961-264-299
Petralia, S.	NUCIA-1952-9-818
Richards and Reid	JCPSA-1934-2-193
Schweikert, G.	ANPYA-1915-48-593
Shields, F. D.	JCPSA-1967-46-1063
Shields and Anderson	JCPSA-1971-55-2636

$S\theta_2^* + M \rightarrow S\theta_2 + M^*$ (energy transfer)

Levitt and Sheen	TFS0A-1965-61-2404
Rao, et al.	JACSA-1969-91-1609
Sidebottom, et al.	JACSA-1971-93-2587

$S\theta_2 + S\theta_2^* \rightarrow S\theta + S\theta_3$

Badcock, et al.	JACSA-1971-93-3115
Driscoll and Warneck	JPCHA-1968-72-3736
Gaydon, et al.	PRLAA-1963-276-461
Jackson and Calvert	JACSA-1971-93-2593
Jakovleva and Kondratjew	ACPYA-1940-13-241
Okuda, et al.	JPCHA-1969-73-4412
Olshewski, et al.	ZPCFA-1965-44-173
Otsuka and Calvert	JACSA-1971-93-2581
Sidebottom, et al.	JACSA-1971-93-2587
Sullivan, et al.	NASCA-1961-N62-15918 (mechanism)

$S\theta_2 + S\theta_4 \rightarrow S\theta_3 + S\theta_3$

Shirai, et al.	KGKZA-1962-65-1906 (mechanism)
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$S\theta_3 + h\nu \rightarrow \theta + S\theta_2$

Norrish and Oldershaw	PRLAA-1959-249-498 (related paper)
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$S\theta_3 + h\nu \rightarrow \theta_2 + S\theta$

Norrish and Oldershaw	PRLAA-1959-249-498
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$S\theta_3 + h\nu \rightarrow 1/2\theta_2 + S\theta_2$

Coehn, A.	ZEELA-1907-13-545
Coehn and Becker	ZEPKA-1910-70-88

$S\theta_3 + M \rightarrow \theta + S\theta_2 + M$

Nettleton and Stirling	SYMCA-1969-12-635
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$S\theta_3^* (+ M) \rightarrow \theta + S\theta_2 (+ M)$

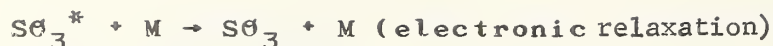
Jaffe and Klein	TFS0A-1966-62-2150
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$S\theta_3 + M \rightarrow \theta_2 + S\theta + M$

Gaydon, et al.	PRLAA-1963-276-461 (mechanism)
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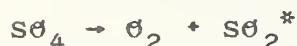
$S\theta_3 + M \rightarrow 1/2\theta_2 + S\theta_2 + M$

Hedley, A. B.	FUSJA-1962-13-45
Hedley, A. B.	*PICFZ-1963-204
Levy and Merryman	JEP0A-1965-87-116
Vitukhnovskaya and Belyanskaya	JAPUA-1960-33-2397



Jaffe and Klein
Tipper and Williams

TFSOA-1966-62-2150
TFSOA-1960-56-1805 (mechanism)



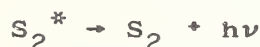
Katz and Gale

*IUAPZ-1970-CP-1E



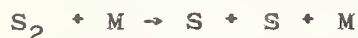
Bodenstein, M.
Breckenridge and Taube
Gunning and Strausz
Knight, et al.
Knight, et al.
Knight, et al.
Porret, D.
Porter, G.
Strausz and Gunning
Wright, F. J.

ZEPCA-1899-29-315 (mechanism)
JCPSA-1970-53-1750
ADPCA-1966-4-143 (mechanism)
JACSA-1963-85-1207 (mechanism)
JACSA-1963-85-2349 (mechanism)
JACSA-1964-86-4243 (mechanism)
HCACA-1936-19-680 (mechanism)
PRLAA-1950-200-284
JACSA-1962-84-4080
JPCHA-1960-64-1648



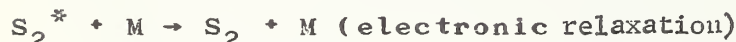
Durand, E.
Fair and Thrush
Fair and Thrush

JCPSA-1940-8-46
DFSOA-1967-44-236
TFSOA-1969-65-1208



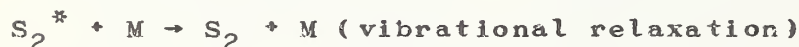
Bodenstein, M.
Norrish and Rideal

ZEPCA-1899-29-315 (mechanism)
JCSOA-1923-123-1689 (mechanism)



Basco and Pearson
Donovan, et al.
Fair and Thrush
Fair and Thrush

TFSOA-1967-63-2684
NATUA-1969-222-1164
DFSOA-1967-44-236
TFSOA-1969-65-1208



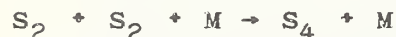
Durand, E.

JCPSA-1940-8-46



Fowles, et al.
Tewarson and Palmer

JACSA-1967-89-1352
SYMCA-1971-13-99 (mechanism)



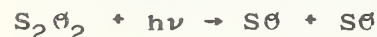
Callear, A. B.
Fowles, et al.
Majerik, J. W.
Norrish and Rideal
Norrish and Rideal

PRLAA-1963-276-401
JACSA-1967-89-1352
DABBB-1970-31-555
JCSOA-1923-123-1689 (mechanism)
JCSOA-1923-123-3202 (mechanism)



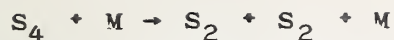
Myerson, et al.

JCPSA-1957-26-1309 (mechanism)



Zeelenberg, A. P.

SYMCA-1959-7-68 (related paper)



Norrish and Rideal
Norrish and Rideal

JCSOA-1923-123-1689 (mechanism)

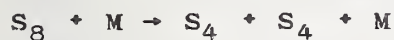
JCSOA-1923-123-3202 (mechanism)



Norrish and Rideal
Norrish and Rideal

JCSOA-1923-123-1689 (mechanism)

JCSOA-1923-123-3202 (mechanism)



Norrish and Rideal
Norrish and Rideal

JCSOA-1923-123-1689 (mechanism)

JCSOA-1923-123-3202 (mechanism)

III(b). REVIEWS

Bufalini, M.

ESTHA-1971-5-685

Cottrell and McCoubrey

BOSKA-1961-97

Gunning and Strausz

ADPCA-1966-4-143

Herzfeld and Litovitz

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